

CLAIMS

1. A method of fabricating an electronic or optoelectronic module comprising an active component (1) mounted on a base (2), a face (1a) of the component being provided with a plurality of contact pads (P1, P'1, P2, P3, P'3) designed to co-operate with corresponding contact zones (Z1, Z'1, Z2, Z3, Z'3) disposed on a face (2a) of the base, at least one contact pad (P1, P'1) of the component having a first vertical contact pad structure being designed to be capable of being bonded by means of a first bonding material (S) to a corresponding contact zone (Z1, Z'1) of the base that has a first vertical contact zone structure, the method being characterized in that it consists:
- in designing said component and said base in such a manner that at least one other contact pad (P2) of the component having an electrical function has a second vertical contact pad structure and is designed to be bonded to a corresponding contact zone (Z2) of the base having a second vertical contact zone structure, the contact pad(s) and the contact zone(s) (P2, Z2) having said second vertical contact pad and contact zone structures respectively being coated in second bonding materials (S1, S2) each having a melting temperature higher than the melting temperature of the first bonding material, said second materials being suitable for being bonded together directly by thermal compression at an assembly temperature lying between the melting temperature of the first bonding material (S) and the melting temperatures of the second bonding materials (S1, S2), the contact pad(s) and the contact zone(s) (P1, Z1) having the first vertical contact pad and contact zone structures respectively being of dimensions such that, when they are bonded together by melting said first bonding material at said assembly temperature, a mutual force of attraction results between the component and the base suitable for bonding together the contact pad(s) and

the contact zone(s) (P2, Z2) respectively having the second vertical contact pad and contact zone structures by thermal compression;

- in pressing the component against the base by placing said contact pads and said corresponding contact zones respectively face to face; and
- by heating the component and the base to said assembly temperature.

2. A method according to claim 1, characterized in that at least one other pad (P3, P'3) and one other corresponding zone (Z3, Z'3) respectively having second vertical contact pad and contact zone structures perform only a function of positioning the component relative to the base.

3. A method according to claim 2, characterized in that the pads (P2, P3, P'3) having said second vertical contact pad structure present identical contact areas.

4. A method according to any one of claims 1 to 3, characterized in that at least one pad and at least one corresponding zone having respective first vertical contact pad and contact zone structures serve only to provide a mutual attraction function between the component and the base.

5. A method according to any one of claims 1 to 3, characterized in that said first bonding material is an alloy based on gold and tin.

6. A method according to any one of claims 1 to 3, characterized in that said second bonding materials (S1, S2) are both constituted by gold.

7. An assembly method according to any one of claims 1 to 3, characterized in that said contact pad (P2) having

said second vertical contact pad structure of the component presents a contact area of less than $1000\text{ }\mu\text{m}^2$.

8. An assembly method according to claim 7, characterized in that said contact pad (P2) having said second vertical contact pad structure of the component presents a contact surface area of less than $150\text{ }\mu\text{m}^2$.

9. An electronic or optoelectronic module comprising an active component (1) mounted on a base (2), one face (1a) of the component being provided with a plurality of contact pads (P1, P'1, P2, P3, P'3) co-operating with corresponding contact zones (Z1, Z'1, Z2, Z3, Z'3) disposed on one face (2a) of the base, at least one contact pad (P1, P'1) of the component having a first vertical contact pad structure being bonded by means of a first bonding material (S) to a corresponding contact zone (Z1, Z'1) of the base having a first vertical contact zone structure, the module being characterized in that at least one other contact pad (P2) of the component having an electrical function has a second vertical contact pad structure and is bonded to a corresponding contact zone (Z2) of the base having a second vertical contact zone structure, the contact pad(s) and the contact zone(s) (P2, Z2) having respectively said second vertical contact pad and contact zone structures being coated with respective second bonding materials (S1, S2) each having a melting temperature higher than the melting temperature of the first bonding material, the second materials being suitable for being bonded together directly by thermal compression at an assembly temperature lying between the melting temperature of the first bonding material (S) and the melting temperatures of the second bonding materials (S1, S2), the contact pad(s) and the contact zone(s) (P1, Z1) respectively having the first vertical contact pad and contact zone structures having dimensions such that, when they are

bonded together by melting said first bonding material at said assembly temperature, a mutual force of attraction results between the component and the base which causes the contact pad(s) and the contact zone(s) (P2, Z2)

5 respectively having the second vertical contact pad and contact zone structures to be bonded together by thermal compression.

10 10. A module according to claim 9, characterized in that said active component (1) is an optoelectronic component of the photodiode type, or an electro-absorption electro-optical modulator, or a laser source having direct modulation control.